

REMARKS

This is a full and timely response to the Office Action mailed May 28, 2008.

New claim 10 has been added to further protect a specific embodiment of the present invention. Thus, claims 1-10 are currently pending in this application. Support for the new claim can be readily found variously throughout the specification and the original claims.

In view of these amendments, Applicant believes that all pending claims are in condition for allowance. Reexamination and reconsideration in light of the above amendments and the following remarks is respectfully requested.

Rejections under 35 U.S.C. §103

Claims 1, 2 and 4-9 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Takashige et al. (JP 9-328336) in view of Kimura et al. (WO 98/15600). Further, claim 3 is rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Takashige et al. in view of Kimura et al. and in further view of Koyanagi et al. (U.S. Patent No. 7,192,986). Applicant respectfully traverses these rejections.

To establish a *prima facie* case of obviousness, the cited reference(s) must teach or suggest the invention as a whole, including all the limitations of the claims. Here, in this case, none of the cited references, either alone or in combination, teach or suggest all of the limitations of the claims with particular emphasis on the limitation "*photocatalyst-containing silicone resin composition comprising TiO₂, a Zr containing compound, a hydrolyzable silicone resin and a Si containing compound containing SiO₂ particles*" and "*wherein said Zr containing compound is a Zr containing organic compound*".

Takashige et al. teaches a composition comprising TiO₂, and a zirconium **organic** compound such as Zr(OC₄H₉)₃(C₃H₇O₂) and Zr(OC₄H₉)(C₃H₇O₂)(C₆H₉O₃)₂. However, as noted by the Examiner in the Office Action, Takashige et al. does not teach SiO₂ particles in the mixture. In the present invention, **zirconium organic compound and SiO₂** are dispersed in the silicone resin to act as a binder or cross-linking agent for the silicone resin. Thus, given the deficiency in the teachings of Takashige et al. (no SiO₂ particles in the mixture), it is clear that Takashige et al. fails

to teach or suggest dispersing SiO₂ particles and zirconium organic compound together as a binder with TiO₂ particles in the silicone resin.

To cure the deficiency of Takashige et al., the Examiner cited the teachings of Kimura et al. Kimura et al. teaches a coating composition comprising a zirconium inorganic component, SiO₂ particles, and TiO₂ particles. However, Kimura et al. fails to teach the use of zirconium organic component as well as the use of silicone resin in which TiO₂ particles are dispersed. Such a deficiency of Kimura et al. is not address in the Office Action. In the composition of Kimura et al., TiO₂ particles are supported on an adhesive layer of silicon tetramethoxide monomer (PS-1), polymethoxy siloxane (PS-2), and polyethoxy siloxane (PS-3), as mentioned in column 14, lines 42 to 49 of Kimura et al. In Kimura et al., TiO₂ particles are included as a photocatalyst, while the zirconium inorganic component (zirconia) is used as an agent to endow alkali resistance, and the silicon compound (Z-1) is used for giving adsorptive property to the photocatalyst carrying structure (see column 5, lines 60 to column 6 line 13, of Kimura et al.).

Although Kimura et al. teaches the use of silicon compound (SiO₂), it is included for the purpose of giving adsorptive property to the photocatalyst carrying structure, and is not included in the silicone resin as the binder of the silicone resin for improving the strength of the resulting layer or membrane. Thus, like Takashige et al., Kimura et al. fails to teach or suggest dispersing SiO₂ particles and zirconium organic compound together with the photocatalyst of TiO₂ particles within the silicone resin as a binder of the silicone resin.

Further, since the claimed invention includes SiO₂ particles as the binder of the silicone resin in combination with zirconium organic compound, the amount of the zirconium compound can be reduced in contrast to Takashige et al. in which only zirconium compound is diffused in the silicone resin as a sole binder of the silicone resin. Hence, the SiO₂ particles can improve the strength of the silicone resin while reducing the amount of the zirconium compound.

Therefore, since Kimura et al. does not remedy the deficiency of Takashige et al., Applicant submits that the pending claims are unobvious and inventive over the cited references. In particular, for the reason outlined above, claim 2 reciting a reduced amount of the zirconium compound can be clearly distinguished from the combination of the cited references.

Further, Applicant submits that Kimura et al. is not combinable with Takashige et al. to accomplish the claimed invention. Based on Applicant's review of the cited references and the Examiner's remarks, Applicant believes that the Examiner has in essence pick and choose from among the various teachings of the cited references to render obvious the present invention. The Examiner has cited Takashige et al. for teaching TiO_2 , zirconium organic compound and silicone resin, Kimura et al. for teaching SiO_2 particles, and Koyanagi et al. for teaching the particle size of the silica.

Under U.S. practice, to establish a case of obviousness, there must be some reason, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990).

The Examiner is not permitted under U.S. practice to pick and choose which teachings of Kimura et al. and Koyanagi et al. to combine with Takashige et al. Such a construction is improper since the Examiner is relying on Applicant's own disclosure to establish his case of obviousness. In other words, the Examiner's conclusion of obviousness in this case is based on improper hindsight reasoning.

Further, Applicant submits that there is no motivation to combine the teachings from Takashige et al., Kimura et al. and Koyanagi et al. to arrive at the present invention since the teachings of the cited references conflict with each other. In other words, in this case, the Examiner has essentially pick and choose from among the various teachings of the cited references to render obvious the present invention even though the teachings of the cited references would not motivate one skilled in the art to arrive at the combination proposed by the Examiner.

Takashige et al. only teaches a zirconium organic compound such as $\text{Zr}(\text{OC}_4\text{H}_9)_3$ ($\text{C}_5\text{H}_7\text{O}_2$) and $\text{Zr}(\text{OC}_4\text{H}_9)(\text{C}_5\text{H}_7\text{O}_2)(\text{C}_6\text{H}_9\text{O}_3)_2$ which conflicts with Kimura et al. which only uses an inorganic zirconium compound such as zirconium oxide and zirconium oxynitrate. Further, Takashige et al., uses the zirconium organic compound as a binder of the silicone resin. Such use in Takashige et al. conflicts with Kimura et al. which uses the inorganic zirconium compound to

adhere a photocatalyst such as TiO_2 on a carrier (see Examples of Kimura et al.). Also, Kimura et al. teaches the use of silicon compound (SiO_2) only for giving adsorptive property to the photocatalyst carrying structure and not as a binder in the silicone resin.

Hence, given the different purposes and the different zirconium compound used in Takashige et al. and Kimura et al., Applicant believes that one skilled in the art would not be motivated to modify the composition of Takashige et al. by adding SiO_2 particles based on the teachings of Kimura et al. Thus, Applicant submits that a person skilled in the art would not be able to arrive at the present invention based on the combined teachings of Takashige et al., Kimura et al. and Koyanagi et al.

In addition, Applicant also wishes to emphasize that when at least one of $\text{Zr}(\text{OC}_4\text{H}_9)_3(\text{C}_5\text{H}_7\text{O}_2)$ and $\text{Zr}(\text{OC}_4\text{H}_9)(\text{C}_5\text{H}_7\text{O}_2)(\text{C}_6\text{H}_9\text{O}_3)_2$ is used as the Zr containing compound in the present invention, there is a remarkable advantage that a film having high photocatalysis and durability can be obtained by the film formation at a relatively low temperature of from room temperature to 200°C (see the Examples of the specification especially Table 1 on page 18). Such superior features of the present invention cannot be expected based on the teachings of Takashige et al., Kimura et al. and Koyanagi et al. As the Examiner already knows, presence of a property not possessed by the prior art is evidence of nonobviousness. *In re Papesch*, 315 F.2d 381, 137 USPQ 43 (CCPA 1963).

Thus, for these reasons, withdrawal of the present rejection is respectfully requested.

CONCLUSION

For the foregoing reasons, all the claims now pending in the present application are believed to be clearly patentable over the outstanding rejections. Accordingly, favorable reconsideration of the claims in light of the above remarks is courteously solicited. If the Examiner has any comments or suggestions that could place this application in even better form, the Examiner is requested to telephone the undersigned attorney at the below-listed number.

Dated: August 28, 2008

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